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We claim:

1. A method for obtaining a transgenic embryo, comprising the steps of:
co-inserting an exogenous nucleic acid and a membrane-disrupted sperm head or a demembranated sperm head into an unfertilized oocyte to form a transgenic fertilized oocyte; and
allowing the transgenic fertilized oocyte to develop into a transgenic embryo.
2. The method of claim 1, wherein the coinserting step is accomplished by piezo-electrically actuated microinjection.
3. The method of claim 2, wherein the exogenous nucleic acid and the membrane-disrupted sperm head are coinjected into the cytoplasm of the unfertilized oocyte.
4. The method of claim 1, wherein the membrane-disrupted sperm head is obtained from a spermatozoon that has been frozen and thawed.
5. The method of claim 1, wherein the membrane-disrupted sperm head is obtained from a rehydrated freeze-dried spermatozoon.
6. The method of claim 1, wherein the sperm head is a demembranated head comprising the nucleus and perinuclear materials.
7. The method of claim 6, wherein the membrane-disrupted sperm head is obtained from a detergent-treated spermatozoon.
8. The method of claim 1, wherein the unfertilized oocyte is a metaphase II oocyte.
9. The method of claim 1, wherein the coinserting step comprises the substep of preincubating the membrane-disrupted or demembranated sperm head with the exogenous nucleic acid for a first time period.

Sub 27 10. The method of claim 9, wherein the first time period is about 30 seconds to about 5 minutes.

11. The method of claim 10, wherein the first time period is about 45 seconds to about 3 minutes.

12. The method of claim 11, wherein the first time period is about 1 minute to about 2 minutes.

12 13. The method of claim 1, wherein the exogenous nucleic acid comprises more than one transgene.

13 14. The method of claim 1, further comprising the step of allowing the transgenic embryo to develop into a live offspring.

14 15. The method of claim 14, wherein the allowing step comprises the substep of transplanting the transgenic embryo into a surrogate mother.

Sub A 3 16. The method of claim 1, wherein the oocyte and the sperm head are from a mammal..

15 17. The method of claim 16, wherein the mammal is selected from the group consisting of primates, ovines, bovines, porcines, ursines, felines, canines, equines and rodents.

17 18. The method of claim 1, wherein the oocyte and the sperm head are from an invertebrate.

18 19. The method of claim 1, wherein the oocyte and the sperm head are from a fish, an amphibian, a reptile or a bird.

19 20. The method of claim 1, wherein the oocyte and the sperm head are from a sea urchin, a lobster, an abalone, or a shellfish.

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A method for obtaining a transgenic embryo, comprising the steps of:

- obtaining a membrane-disrupted sperm head or a demembranated sperm head;
- mixing the membrane-disrupted sperm head or demembranated sperm head with an exogenous nucleic acid containing a desired gene,
- coinjecting the mixture into an isolated unfertilized metaphase II oocyte to form a transgenic fertilized oocyte; and
- allowing the transgenic fertilized oocyte to develop into a transgenic embryo.